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Route To:

Subject: Annual Insect and Disease Conditions Report

To: Director, Forest Health Technology Enterprise Team-Fort Collins, Attention: Ross Pywell

Attached is the CY 1998 Forest Insect and Disease Conditions Report for Region 3. Instructions for accessing the digital map files for western spruce budworm and mountain pine beetle for New Mexico will be forthcoming. Hard copy maps will be sent for Arizona.

/s/ Leonard L. Lucero

LEONARD L. LUCERO
Director of Forestry and Forest Health

Attachment

cc:
Douglas L. Parker
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Conditions in Brief

In the Southwest, bark beetle-caused tree mortality decreased from 91,235 acres in 1997 to 43,880 acres in 1998. Tree mortality in the lower elevation pinyon-juniper forest cover type (woodlands) was caused by pinyon engraver beetles (65 acres); in the ponderosa pine forest cover type, tree mortality was caused by the roundheaded pine beetle (6,730 acres), pine engraver beetles (18,165 acres), western pine beetle (2,340 acres), and mountain pine beetle (7,500 acres). In the higher elevation mixed conifer and spruce-fir forest cover types, tree mortality was caused by Douglas-fir beetle (1,555 acres), fir engraver/western balsam bark beetle complex (4,835 acres), and spruce beetle (2,690 acres).

Insect defoliator activity Region-wide increased from 266,395 acres in 1997 to 321,135 acres in 1998. This defoliation was caused by the western spruce budworm (320,665 acres), spruce aphid (170 acres), and *Nepytia janetae* (300 acres), a defoliator of spruce and fir.

A complex of large aspen tortrix, western tent caterpillar, marssonina leaf spot, and/or abiotic factors occurred on 85,905 acres.

Dwarf mistletoes continue to be the primary cause of growth loss (other than overly dense stocking) in both the ponderosa pine and mixed-conifer cover types. The estimated annual volume loss from these parasites is 25 million cubic feet. Their incidence has probably increased over the past century.

Root diseases cause an estimated 5 million cubic feet of volume loss annually and create hazard trees in campgrounds and along roadways. The most common root diseases in the Southwest are armillaria and annosus. Incidence is higher in mixed-conifer and spruce-fir forests than in ponderosa pine forests. Like other native diseases including mistletoes, root and butt rots can be beneficial for some wildlife species.

White pine blister rust occurs throughout most of the range of southwestern white pine on two Ranger Districts of the Lincoln National Forest and the Mescalero-Apache Indian Reservation in southern New Mexico. In 1998, a single gooseberry bush believed to be infected with white pine blister rust was found on Gallinas Peak, Cibola National Forest. This is about 50 miles north of the Capitan Mountains, the previous northern limit in New Mexico.

Insects: Native

Douglas-fir Beetle,
Dendroctonus pseudotsugae

Region 3: Arizona, New Mexico

Host(s): Douglas-fir

Douglas-fir beetle-caused tree mortality decreased from 4,455 acres in 1997 to 1,555 acres in 1998. In Arizona, Douglas-fir beetle-caused mortality occurred on the Apache-Sitgreaves (405 acres), Coconino (425 acres), Coronado (10 acres), Kaibab (25 acres), Prescott (275 acres), and the Tonto (65 acres) National Forests; the Fort Apache (5 acres) and Navajo (30 acres) Indian Reservations; and 40 acres on private land. In New Mexico, Douglas-fir beetle-caused mortality occurred on the Gila (165 acres) and the Lincoln (110 acres) National Forests.

Fir Engraver Beetle,
Scolytus ventralis

Region 3: Arizona, New Mexico

Host(s): White Fir

Tree mortality caused by both the fir engraver and western balsam bark beetles (Dryocoetes confusus) was detected on 4,835 acres in 1998, compared to 4,345 acres in 1997. Tree mortality on Federal lands in Arizona occurred on the Apache-Sitgreaves (345 acres), Coconino (1,830 acres), Coronado (65 acres), Kaibab (545 acres), and Tonto (5 acres) National Forests; Fort Apache (30 acres), and Navajo (5 acres) Indian Reservations; the Grand Canyon (15 acres) National Park, and 5 acres of private land. In New Mexico, fir engraver beetle-caused mortality occurred on the Carson (20 acres), Cibola (155 acres), Gila (1560 acres), Lincoln (15 acres), and Santa Fe (240 acres) National Forests.

Ips Beetle,
Ips spp.

Region 3: Arizona, New Mexico

Host(s): Ponderosa pine, pinyon pine

Ips-killed ponderosa pines decreased from 22,640 acres in 1997 to 18,165 acres in 1998. In Arizona, tree mortality was detected on the Apache-Sitgreaves (110 acres), Coconino (820 acres), Coronado (40 acres), Kaibab (820 acres), Prescott (1,655 acres), and Tonto (12,935 acres) National Forests; and the Fort Apache (155 acres), Navajo (35), and San Carlos (955 acres) Indian Reservations. In New Mexico, Ips-caused tree mortality occurred on the Gila (10 acres) and Lincoln (25 acres) National Forests and the Mescalero-Apache Indian Reservation (105 acres). In Arizona, pinyon pine mortality resulting from Ips beetle attacks (Ips confusus) was detected on the Coconino (35 acres) National Forest, Walnut Canyon National Monument (20 acres), and Hualapai Indian Reservation (10 acres). No pinyon Ips activity was detected in New Mexico.

Mountain Pine Beetle,
Dendroctonous ponderosae

Region 3: Arizona, New Mexico

Host(s): Ponderosa pine

Mountain pine beetle-caused ponderosa pine mortality decreased from 10,080 acres in 1997 to 7,500 acres in 1998. Most of this mortality occurred in the Grand Canyon National Park (7,425 acres). Smaller areas of mountain pine beetle-caused tree mortality occurred on the Kaibab National Forest (10 acres) in Arizona and on the Santa Fe National Forest (65 acres) in northern New Mexico.

Roundheaded Pine Beetle,
Dendroctonus adjunctus

Region 3: Arizona, New Mexico

Host(s): Ponderosa pine

Roundheaded pine beetle-caused tree mortality decreased over 50 percent from 18,435 acres in 1997 to 6,730 acres 1998. Mortality from roundheaded pine beetle attacks in Arizona occurred on the Coronado National Forest and totaled 10 acres. In New Mexico, roundheaded pine

beetle-killed trees were detected on the Lincoln National Forest (4,020 acres) and Mescalero Apache Indian Reservation (2,700 acres).

Spruce Beetle,
Dendroctonus rufipennis

Region 3: Arizona, New Mexico

Host(s): Spruce

Spruce beetle-caused tree mortality increased from 1,650 acres in 1997 to 2,690 acres in 1998. In Arizona, spruce beetle-killed trees were detected on the Apache-Sitgreaves (50 acres), Coconino (5 acres), Kaibab (240 acres) National Forests; and the Fort Apache (15 acres) and Navajo (140 acres) Indian Reservations. In New Mexico, spruce beetle-caused tree mortality was detected on the Carson (440 acres), Cibola (145 acres), Gila (10), Lincoln (290 acres) and Santa Fe (1200 acres) National Forests and Mescalero-Apache (155 acres) Indian Reservation.

Western Pine Beetle,
Dendroctonus brevicomis

Region 3: Arizona, New Mexico

Host(s): Ponderosa pine

Western pine beetle-caused tree mortality decreased from 12,210 acres in 1997 to 2,340 acres in 1998. Mortality in Arizona occurred on the Apache-Sitgreaves (85 acres), Coconino (35 acres), Coronado (5 acres), Kaibab (105 acres), and Tonto (5 acres) National Forests; the Fort Apache (60 acres), Navajo (125 acres), and San Carlos (45 acres) Indian Reservations; and on 15 acres of state and private lands. In New Mexico, mortality from this beetle was found only on the Gila (1,860 acres) National Forest.

Western Spruce Budworm,
Choristoneura occidentalis

Region 3: Arizona, New Mexico

Host(s): True firs, Douglas-fir, and Spruce

Western spruce budworm defoliation increased from 217,510 acres in 1997 to 320,665 acres in 1998. In Arizona, western spruce budworm defoliation was detected on the Apache-Sitgreaves (490 acres) and Kaibab (5,400 acres) National Forests; Grand Canyon National Park (1,440

acres); and the Navajo (2,805 acres) Indian Reservation. In New Mexico, western spruce budworm defoliation was detected on the Carson (174,470 acres), Cibola (1,330 acres), Gila (85 acres), and Santa Fe (72,130 acres) National Forests; and on 62,515 acres of mixed state and private lands in northern New Mexico.

Nepytia janetae

Region 3: Arizona

Host(s): Spruce, fir

N. janetae defoliation was detected on 300 acres in 1998. Defoliation was detected on the Coronado (175 acres) National Forest and Fort Apache (125 acres) Indian Reservation.

Insects: Nonnative

European Gypsy Moth,
Lymantria dispar

Region 3: Arizona, New Mexico

Host(s): Hardwoods

No adult male gypsy moths were captured in Arizona or New Mexico in 1998.

Spruce Aphid,
Elatobium abietinum

Region 3: Arizona

Host(s): Spruce

Spruce aphid defoliation decreased from 27,950 acres in 1997 to 170 acres in 1998. All defoliation was on the Fort Apache Indian Reservation. No spruce aphid defoliation was detected in New Mexico.

Diseases: Native

Annosus Root Disease,
Heterobasidion annosum

Region 3: Arizona, New Mexico

Host(s): True firs, ponderosa pine

Root diseases and their associated pests may be responsible for about one-third of the conifer mortality in the Region. Annosus root disease accounts for about 20 percent of this mortality.

Armillaria Root Disease,
Armillaria spp.

Region 3: Arizona, New Mexico

Host(s): Douglas-fir, ponderosa pine, true firs, spruce, aspen

Armillaria spp. account for about 80 percent of root disease mortality across the Region. The disease is more prevalent in mixed conifer and spruce-fir forests than in ponderosa pine forests. Region 3 is tracking the long-term affects and spread of this and other root diseases on a number of sites using a series of permanent plots.

Black Stain Root Disease,
Leptographium wageneri varieties

Region 3: New Mexico

Host(s): Pinyon pine, Douglas-fir

Both Leptographium wageneri var. wageneri, which infects pinyon, and L. wageneri var. pseudotsugae, which infects Douglas-fir, are rare in the Southwestern Region. The former has only been confirmed in two isolated areas in northern New Mexico, while the latter has been observed on a single site in southern New Mexico.

Dwarf Mistletoes,
Arceuthobium spp.

Region 3: Arizona, New Mexico

Host(s): Pines, Douglas-fir, spruce, true firs

Dwarf mistletoes are the most significant pathogens in the Southwestern Region. Over one million acres of National Forest commercial timberlands in each state have some level of infection. The disease also affects several hundred thousand acres in non-commercial and reserved areas, woodlands, and other public and private forest lands. Region 3 is monitoring the disease on several sites using permanent plots. Over the past few years, the Region has been active in developing new management recommendations for this disease.

Ponderosa Pine Needle Cast,
Lophodermella cerina

Region 3: Arizona, New Mexico

Host(s): Ponderosa pine

Needle cast was not detected in 1998, compared to 2,575 acres in 1997.

Diseases: Nonnative

White pine blister rust,
Cronartium ribicola

Region 3: New Mexico

Host(s): Southwestern white pine

White pine blister rust occurs throughout most of the range of southwestern white pine on two Ranger Districts of the Lincoln National Forest and the Mescalero Apache Indian Reservation in southern New Mexico. In 1998, a single gooseberry bush believed to be infected with white pine blister rust was found on Gallinas Peak, Cibola National Forest. This is about 50 miles north of the Capitan Mountains, the previous northern limit in New Mexico.

Declines and Complexes

Aspen Defoliator Complex,

Region 3: Arizona, New Mexico

Host(s): Aspen

Aspen defoliation caused by a complex of insects, diseases, and abiotic factors increased from 20,915 acres in 1997 to 85,905 acres in 1998. Defoliation on Federal lands in Arizona occurred on the Apache-Sitgreaves (4,440 acres), Coconino (785 acres), Kaibab (35,905 acres), and Prescott (10 acres) National Forests; Fort Apache (1,510 acres) and Navajo (4,330 acres) Indian Reservations; Grand Canyon (11,590) National Park; and state and private lands (80 acres). In New Mexico, aspen defoliation was detected on the Carson (12,500 acres), Cibola (3,230 acres), Gila (70 acres), Lincoln (235 acres) and Santa Fe (2,175 acres) National Forests and 9,045 acres of mixed state and private lands in northern New Mexico.

Abiotic Damage

Drought,

Region 3: Arizona

Host(s): All species

Drought damage was detected on a total of 2,782 acres in 1998, compared with 957 acres in 1997. Most damage occurred on the Coconino (2,595 acres) National Forest, with little damage occuring on the Kaibab (89 acres) and Tonto (56) National Forests, and private (42 acres) lands.

Winter Injury,

Region 3: Arizona

Host(s): All species

Winter injury was detected on 159 acres in 1998, on the San Carlos Indian Reservation.

FOREST PEST INFORMATION SYSTEM (FPIS)

Region: 3 Date: February 18, 1999 Name of Preparer: Bobbe Fitzgibbon

Pest	State	Land Ownership Class	Acres Infested (thousands) (1 decimal)	Volume Killed (MCF) 1 decimal)	Number of Trees Killed (thousands)	Number of SPB Spots
MPB	AZ	1				
		2	7.4	121	2.2	
		3				
	NM	1				
		2				
		3				
WSB	AZ	2	4.2			
		3	--			
	NM	1	248.0			
		2	--			
		3	62.5			
		1				
		2				
		3				
		1				
		2				
		3				

FOREST PEST INFORMATION SYSTEM (FPIS)

Region: 3 Date: February 18, 1999 Name of Preparer: Mary Lou Fairweather

Pest	State	Land Ownership Class	Acres Infested (thousands) (1 decimal)	Volume Killed (MCF) 1 decimal)	Number of Trees Killed (thousands)	Number of SPB Spots
DM	AZ	1	1040			
		2	674			
		3	25			
	NM	1	1440			
		2	348			
		3	581			
RDS	AZ	1	219	2		
		2				
		3				
	NM	1	860	2.6		
		2				
		3				
		1				
		2				
		3				
		1				
		2				
		3				
		1				
		2				
		3				
		1				
		2				
		3				